CLAIM LISTING

Applicants submit the following claim listing in compliance with 37 C.F.R. § 1.121(c)

1-7. (Canceled).

8. (Currently Amended) ~~The method of claim 7, wherein:~~ A method of operating a lime kiln having an inclined rotary vessel, the method comprising the steps of:

advancing lime mineral from an upper end of the inclined rotary vessel to a lower end of the inclined rotary vessel,

introducing combustion air and combustible fuel in a sub-stoichiometric ratio through the lower end of the rotary vessel,

generating a flame at the lower end of the rotary vessel, and

introducing additional combustion air through an opening in a wall of the rotary vessel at a location downstream, relative to a kiln gas stream, of the flame and between the lower end of the rotary vessel and the upper end of the rotary vessel,

wherein the step of advancing lime mineral comprises advancing lime mineral through a calcining zone of the rotary vessel to liberate CO2 from the lime mineral, and the step of introducing additional combustion air comprises introducing additional air into the calcining zone of the rotary vessel.

9-12. (Canceled).

13. (Currently Amended) ~~The method of claim 7,~~ A method of operating a lime kiln having an inclined rotary vessel, the method comprising the steps of:

advancing lime mineral from an upper end of the inclined rotary vessel to a lower end of the inclined rotary vessel,

introducing combustion air and combustible fuel in a sub-stoichiometric ratio through the lower end of the rotary vessel,

generating a flame at the lower end of the rotary vessel, and

introducing additional combustion air through an opening in a wall of the rotary vessel at a location downstream, relative to a kiln gas stream, of the flame and between the lower end of the rotary vessel and the upper end of the rotary vessel,

wherein the step of introducing additional combustion air comprises introducing combustion air into a calcining zone of the rotary vessel.

14-18. (Canceled).

19. (Original) A method of operating a preheater/precalciner kiln having an inclined rotary vessel, the method comprising the steps of:

advancing mineral from a preheater/precaliner assembly into an upper end of the inclined rotary vessel,

advancing mineral from the upper end of the rotary vessel to a lower end of the inclined rotary vessel,

introducing a first quantity of combustion air and combustible fuel through the lower end of the rotary vessel, and

introducing a second quantity of combustion air through an opening in a wall of the rotary vessel at a location between the lower end of the rotary vessel and the upper end of the rotary vessel.

20. (Original) The method of claim 19, wherein the first introducing step comprises introducing combustion air and combustible fuel in a sub-stoichiometric ratio.

21. (Original) The method of claim 19, wherein:

the step of advancing mineral comprises advancing mineral through a calcining zone of the rotary vessel to liberate CO_2 from the mineral, and

the step of introducing the second quantity of combustion air comprises introducing the second quantity of combustion air into the calcining zone of the rotary vessel.

22. (Original) The method of claim 19, wherein the step of introducing the second quantity of combustion air comprises introducing a mass flow rate of about 1% to about 15% of the rate of mass consumption of combustion air by the preheater/precalciner kiln.

23. (Original) The method of claim 19, wherein:

the preheater/precalciner kiln further has an air nozzle extending into the rotary vessel through the opening in the wall of vessel, and

the step of introducing the second quantity of combustion air comprises introducing additional combustion air through the air nozzle.

24. (Original) The method of claim 23, wherein:

the air nozzle has a pressurized air source coupled thereto, and

the step of introducing the second quantity of combustion air further comprises introducing pressurized air from the pressurized air source through the nozzle.

25. (Original) The method of claim 19, wherein the step of introducing the second quantity of combustion air comprises introducing combustion air into a calcining zone of the rotary vessel.

26. (Previously Presented) A mineral processing kiln, comprising:

an inclined rotary vessel having a lower end and an upper end, the rotary vessel having an air inlet opening defined therein at a location between the upper end and the lower end thereof,

a preheating/precalcining assembly positioned proximate to the upper end of the rotary vessel, the preheating/precalcining assembly comprising a stationary vessel through which (i) mineral passes prior to advancement into the rotary vessel, and (ii) a kiln gas stream passes in contact with the mineral subsequent to advancement out of the rotary vessel,

a stationary hood positioned proximate to the lower end of the rotary vessel, and

a burner positioned proximate to the lower end of the rotary vessel.

27. (Original) The mineral processing kiln of claim 26, further comprising an air nozzle extending into the rotary vessel through the air inlet opening of the wall of vessel.

28. (Original) The mineral processing kiln of claim 27, further comprising a pressurized air source coupled to the air nozzle.

29. (Original) The mineral processing kiln of claim 26, further comprising a primary combustion air source adapted to advance combustion air through the stationary hood, wherein the primary air source and the burner are operable to create sub-stoichiometric air/fuel conditions in the lower end of the rotary vessel.

30. (Canceled).

31. (Previously Presented) A lime kiln, comprising:

an inclined rotary vessel having a lower end and an upper end, the rotary vessel having an air inlet opening defined therein at a location between the upper end and the lower end thereof,

a mineral feed assembly operable to heat lime mineral by contact with a kiln gas stream advancing therethrough and thereafter advance the lime mineral into the upper end of the rotary vessel,

a stationary hood positioned proximate to the lower end of the rotary vessel, and

a burner positioned proximate to the lower end of the rotary vessel.

32. (Original) The lime kiln of claim 31, further comprising an air nozzle extending into the rotary vessel through the air inlet opening of the wall of vessel.

33. (Original) The lime kiln of claim 32, further comprising a pressurized air source coupled to the air nozzle.

34. (Original) The lime kiln of claim 31, further comprising a primary combustion air source adapted to advance combustion air through the stationary hood, wherein the primary air source and the burner are operable to create sub-stoichiometric air/fuel conditions in the lower end of the rotary vessel.